

APPLICATION

FOR UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, JAMES SOMMERS, a citizen of the UNITED STATES OF AMERICA, have invented new and useful improvements in a FENCE ROUTER TABLE SYSTEM of which the following is a specification:

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a fence router table system and more particularly pertains to supporting and routing linear fence components in a safe, accurate, and efficient manner.

Description of the Prior Art

The use of pantographs and routers of known designs and configurations is known in the prior art. More specifically, pantographs and routers of known designs and configurations previously devised and utilized for the purpose of fabricating fences through conventional methods and apparatuses are known to consist basically of familiar, expected, and obvious structural configurations, notwithstanding the myriad of designs encompassed by the crowded prior art which has been developed for the fulfillment of countless objectives and requirements.

By way of example, U.S. Patent Number 1,696,032 issued December 18, 1928 to Glover relates to an engraving cutter head and depth gauge. U.S. Patent Number 3,222,984 issued December 14, 1965 to Loshin relates to a coordinate transformation. Lastly, U.S. Patent Number 5,203,088 issued April 20, 1993 to Morgan relates to a method and machine for the engraving of articles.

While these devices fulfill their respective, particular objectives and requirements, the aforementioned patents do not

describe fence router table system that allows supporting and routing linear fence components in a safe, accurate, and efficient manner.

In this respect, the fence router table system according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in doing so provides an apparatus primarily developed for the purpose of supporting and routing linear fence components in a safe, accurate, and efficient manner.

Therefore, it can be appreciated that there exists a continuing need for a new and improved fence router table system which can be used for supporting and routing linear fence components in a safe, accurate, and efficient manner. In this regard, the present invention substantially fulfills this need.

SUMMARY OF THE INVENTION

In view of the foregoing disadvantages inherent in the known types of pantographs and routers of known designs and configurations now present in the prior art, the present invention provides an improved fence router table system. As such, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new and improved fence router table system and method which has all the advantages of the prior art and none of the disadvantages.

To attain this, the present invention essentially comprises a table. The table has a planar working surface. The working surface is in a horizontal plane. The working surface has depending legs. The depending legs maintain the table and working surface at a desired height. The working surface has a near side and a parallel far side. Parallel lateral sides are provided between the near side and the far side. The sides are in a rectangular configuration. A parallel rail is provided. The rail is located above each lateral side. Two fixed blocks are provided. The blocks are provided on each lateral side adjacent to the near and far sides. An inverted L-shaped spacer is provided. The spacer couples each lateral side with the associated fixed blocks. A pair of adjustable supports is provided on each rail adjacent to the near and far side. The working surface has a center line. The center line is parallel with, and midway between, the lateral sides. In this manner the working surface is divided into a first half and a second half. Threaded holes are provided in the spacer adjacent to the second half.

A slide assembly is provided. The slide assembly includes a tube. The tube has ends. The ends are positioned above the rails. The slide assembly has pair of brackets. The brackets couple the ends of the tube with the rails. Each bracket has a circular upper hole. The circular upper hole rotatably receives

the ends of the tube. A cylindrical lower tunnel is provided. The lower tunnel slidably receives the rails for supporting and moving the tube in a path of movement always parallel with the near and far sides.

Provided next is a template. The template is removably positioned on the first half of the working surface. The template has primary recesses and secondary recesses. The primary recesses correspond to the profile and depth of the secondary recesses. In this manner linear fence components are formed.

A plurality of linear fence components is provided next. The fence components are removably positioned in parallel relationship on the second half of the working surface. A first edge is in contact with the template and with a second edge. A threaded bolt is provided. The threaded bolt extends through each threaded hole. In this manner the components are securely retained in parallel relationship with each other and in contact with the template.

A pantograph with a primary arm is provided. The primary arm has a free exterior end. The free exterior end extends toward the far side. The primary arm also has an interior end. The interior end has a pin. The pin is pivotably coupled to the tube midway between the center line and the rail without the threaded holes. The pantograph has a secondary arm. The

secondary arm has a free exterior end. The free exterior end extending toward the far side. The secondary arm has an interior end. The interior end has a pin. The pin is pivotably coupled to the tube midway between the center line and the rail with the threaded holes. Each arm includes a pair of vertical plates and adjacent upper and lower plates. A strengthening cylinder is provided within the tube. The pantograph also has a cross arm. The cross arm has ends. The ends are pivotally coupled to the primary and secondary arms adjacent to their free ends. Movement of the primary arm will cause corresponding movement of the secondary arm. The primary and secondary arms are always parallel to each other.

Further provided is a power driven router. The router is secured to, and depends from, the free end of the secondary arm. The router is located over the linear fence components. In this manner recesses are formed in the linear fence components.

Provided last are control mechanisms. The control mechanisms includes a scribe. The scribe is secured to, and depends from, the free end of the primary arm. The scribe is located over the template. The scribe has a knob. The knob is adapted to be held by a user in moving the scribe to outline the profile of the primary recesses. The control mechanisms also includes a handle. The handle has an exterior end. The exterior end is formed with a grip. The handle also has an interior end.

The interior end is threadedly coupled to the midpoint of the tube for guiding the router in forming the depths of the primary and secondary recesses. The grip is also adapted to function as a variable counter weight by being rotated to increase and decrease the moment of inertia of the pantograph around the tube.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims attached.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of descriptions and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures,

methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

It is therefore an object of the present invention to provide a new and improved fence router table system which has all of the advantages of the prior art pantographs and routers of known designs and configurations and none of the disadvantages.

It is another object of the present invention to provide a new and improved fence router table system which may be easily and efficiently manufactured and marketed.

It is further object of the present invention to provide a new and improved fence router table system which is of durable and reliable constructions.

An even further object of the present invention is to provide a new and improved fence router table system which is susceptible of a low cost of manufacture with regard to both materials and labor, and which accordingly is then susceptible of low prices of sale to the consuming public, thereby making such fence router table system economically available to the buying public.

Even still another object of the present invention is to provide a fence router table system for supporting and routing

linear fence components in a safe, accurate, and efficient manner.

Lastly, it is an object of the present invention to provide a new and improved fence router table system. A table with a working surface has a parallel rail on each side. A slide assembly includes a tube and a pair of brackets. Each bracket has a hole. The hole rotatably receives the ends of the tube. The slide assembly includes a cylindrical tunnel. The tunnel slidably receives the rails. A pantograph has primary and secondary arms. Each arm has a free exterior end and an interior end. The interior end is pivotably coupled to the tube. A router is secured to, and depends from, the free end of the secondary arm. Control mechanisms include a scribe. The scribe is secured to, and depends from, the free end of the primary arm. Movement of the primary arm and scribe with respect to a template will cause corresponding movement of the secondary arm and router with respect to work pieces to be routed.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to

the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

Figure 1 is a side elevational view of a fence router table system constructed in accordance with the principles of the present invention.

Figure 2 is a far side elevational view of the system taken along line 2-2 of Figure 1.

Figure 3 is a cross sectional view of the system taken along line 3-3 of Figure 1.

Figure 4 is a cross sectional view of the system taken along line 4-4 of Figure 1.

Figure 5 is a plan view of the system taken along line 5-5 of Figure 1.

Figure 6 is a cross sectional view of the system taken along line 6-6 of Figure 5.

Figure 7 is a cross sectional view of the system taken along line 7-7 of Figure 2.

Figure 8 is a perspective illustration of a section of a fence fabricated by the system of the present invention.

The same reference numerals refer to the same parts throughout the various Figures.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings, and in particular to Figure 1 thereof, the preferred embodiment of the new and improved fence router table system embodying the principles and concepts of the present invention and generally designated by the reference numeral 10 will be described.

The present invention, the fence router table system 10 is comprised of a plurality of components. Such components in their broadest context include a table, a slide assembly, a pantograph, a router, and control mechanisms. Such components are individually configured and correlated with respect to each other so as to attain the desired objective.

First provided is a table 14. The table has a planar working surface 16. The working surface is in a horizontal plane. The working surface has depending legs 18. The depending legs maintain the table and working surface at a desired height. The working surface has a near side 20 and a parallel far side 22. Parallel lateral sides 24 are provided between the near side and the far side. The sides are in a rectangular configuration. A parallel rail 26 is provided. The rail is

located above each lateral side. Two fixed blocks 28 are provided. The blocks are provided on each lateral side adjacent to the near and far sides. An inverted L-shaped spacer 30 is provided. The spacer couples each lateral side with the associated fixed blocks. A pair of adjustable supports 32 is provided on each rail adjacent to the near and far side. The adjustable supports move to save the distance between the fixed blocks 28. The adjustable supports are preferably about 1/8 inch shorter than the fixed blocks and are needed for use in the middle of the table. The working surface has a center line 34. The center line is parallel with, and midway between, the lateral sides. In this manner the working surface is divided into a first half and a second half. Threaded holes 36 are provided in the spacer adjacent to the second half.

A slide assembly 40 is provided. The slide assembly includes a tube 42. The tube has ends 44. The ends are positioned above the rails. The slide assembly has pair of brackets 46. The brackets couple the ends of the tube with the rails. Each bracket has a circular upper hole 48. The circular upper hole rotatably receives the ends of the tube. A cylindrical lower tunnel 50 is provided. The lower tunnel slidably receives the rails for supporting and moving the tube in a path of movement always parallel with the near and far sides.

Provided next is a template 52. The template is removably positioned on the first half of the working surface. The template has primary recesses 54 and secondary recesses 56. The primary recesses correspond to the profile and depth of the secondary recesses 56. In this manner linear fence components 12 are formed.

A plurality of linear fence components 12 is provided next. The fence components are removably positioned in parallel relationship on the second half of the working surface. A first edge is in contact with the template and with a second edge. A threaded bolt 60 is provided. The threaded bolt extends through each threaded hole. In this manner the components are securely retained in parallel relationship with each other and in contact with the template. In an alternate embodiment of the invention, the threaded bolts are replaced by air assisted pistons.

A pantograph with a primary arm 62 is provided. The primary arm has a free exterior end 64. The free exterior end extends toward the far side. The primary arm also has an interior end 66. The interior end has a pin 68. The pin is pivotably coupled to the tube midway between the center line and the rail without the threaded holes. The pantograph has a secondary arm 70. The secondary arm has a free exterior end 72. The free exterior end extending toward the far side. The secondary arm has an interior end 74. The interior end has a pin 76. The pin

is pivotably coupled to the tube midway between the center line and the rail with the threaded holes. Each arm includes a pair of vertical plates 78 and adjacent upper and lower plates 80, 82. A strengthening cylinder 84 is provided within the tube. The pantograph also has a cross arm 86. The cross arm has ends. The ends are pivotally coupled to the primary and secondary arms adjacent to their free ends. Movement of the primary arm will cause corresponding movement of the secondary arm. The primary and secondary arms are always parallel to each other.

Further provided is a power driven router 88. The router is secured to, and depends from, the free end of the secondary arm. The router is located over the linear fence components. In this manner recesses are formed in the linear fence components.

Provided last are control mechanisms. The control mechanisms includes a scribe 90. The scribe is secured to, and depends from, the free end of the primary arm. The scribe is located over the template. The scribe has a knob 92. The knob is adapted to be held by a user in moving the scribe to outline the profile of the primary recesses. The control mechanisms also includes a handle 94. The handle has an exterior end. The exterior end is formed with a grip 96 or counterweight. The handle also has an interior end 96. The interior end is threadedly coupled to the midpoint of the tube for guiding the router in forming the depths of the primary and secondary

recesses. The grip is also adapted to function as a variable counter weight by being rotated to increase and decrease the moment of inertia of the pantograph around the tube. The grip is adapted to be held and moved by a user during operation and use and also to function as a counterweight to offset the weight of the router. It adjusts for different routers of different weights. A set screw preferably secures the grip or counterweight to the handle 94 to save the distance to the tube 42 for ease of operation.

As to the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in

the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.